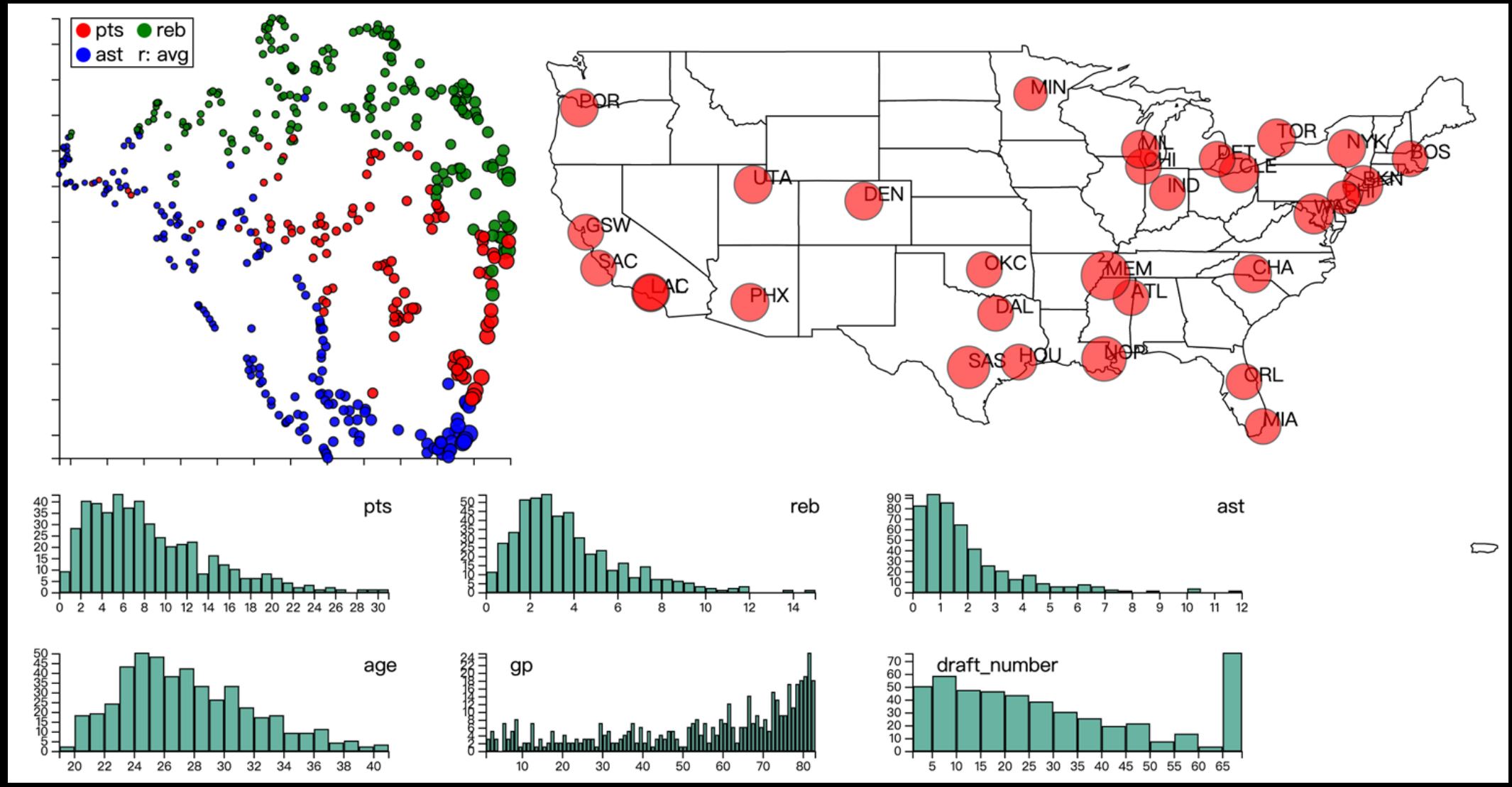
D3: Static Visualization

(NBA/basketball players Dataset)

Deadline: 11:59PM, 10/26 (Wed.)



This image is for your reference.
You do not have to produce exactly same visualization

Dataset

- NBA1516.csv
  - NBA basketball players data in 15-16 season
  - Data attributes
    - Easy to understand: player_name, team_abbreviation, age, draft_number
    - pts, reb, ast: points, rebounds and assists per game.
    - ptsNorm, rebNorm, astNorm: normalized points, rebounds and assists per game.
    - umapX, umapY: the result of projection [pts, reb, ast] vectors to 2D space
      - The projection result make players with similar [pts, reb, ast] vectors close in 2D space
      - You do not have know the details of projection process for this homework. If you want to know check here https://umap-learn.readthedocs.io/en/latest/basic_usage.html
- us-states.json: map of USA
- TeamLoc.csv: latitude and longitude of each team

What you need to know?

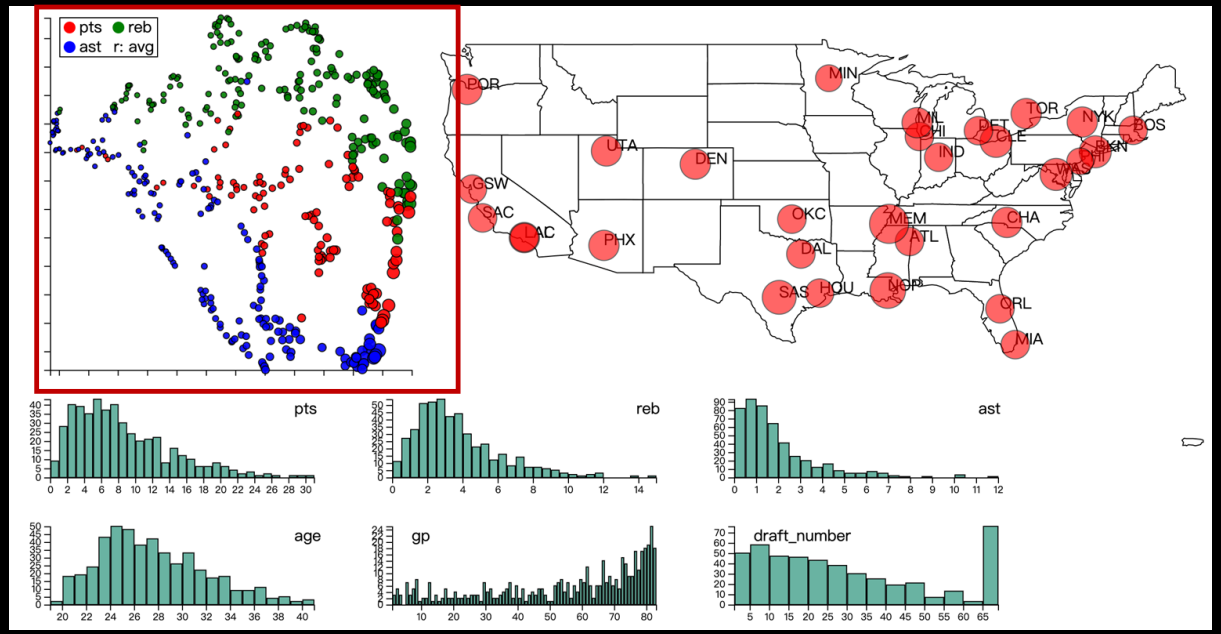
- What do we have to know (D3) to make this homework done?
  - 01_BeforeD3
  - 02_Selection
  - 03_DataBinding
  - 04_Scale_Axis
  - 05_BasicShape
  - 06_Map

Practice1 : Javascript Data Process

- Convert the data attributes to “Number” or the data type you want in the very beginning after you load the data
  - For example: after you load NBA1516.csv, Javascript considers most of the attributes as “string” data type, and that is not convenient for the following data visualization.

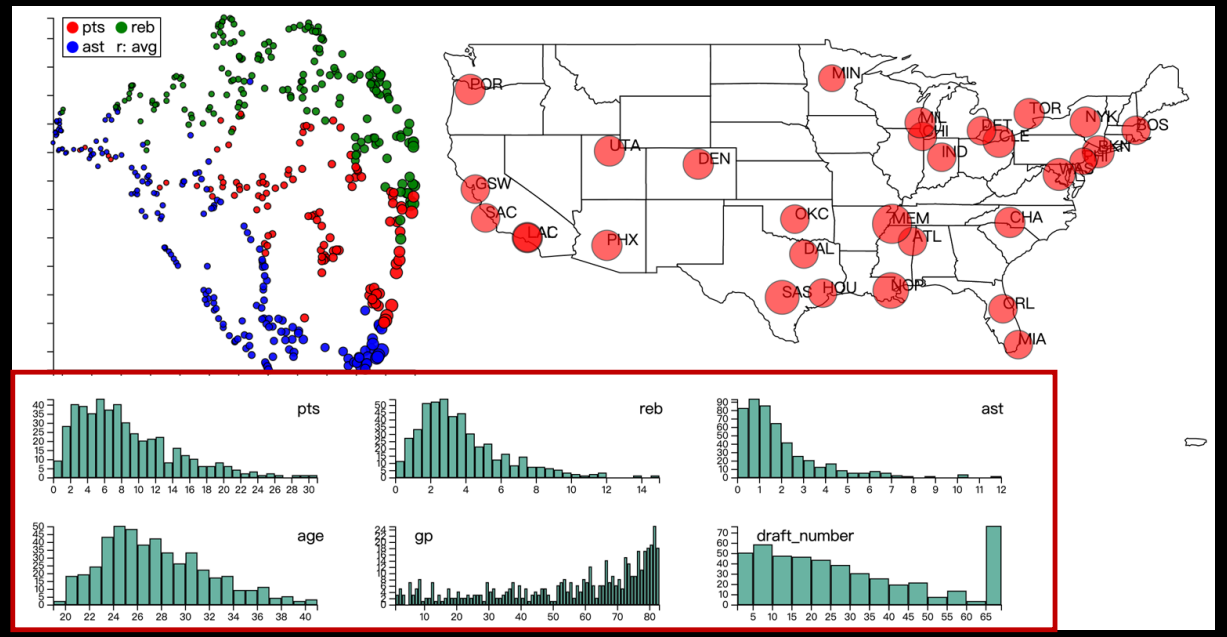
Practice 2: Scatterplot

- Each circle is a player
- Visual channel “X position” encodes data attribute “umapX”
- Visual channel “Y position” encodes data attribute “umapY”
- The circle size encodes the average of data attribute “ptsNorm”, “rebNorm”, and “astNorm”
- The circle color shows which of “ptsNorm”, “rebNorm”, and “astNorm” is the maximum property of the player
- Plot x and y axes without tick text
- No x and y axis labels
- Remember to add the legend



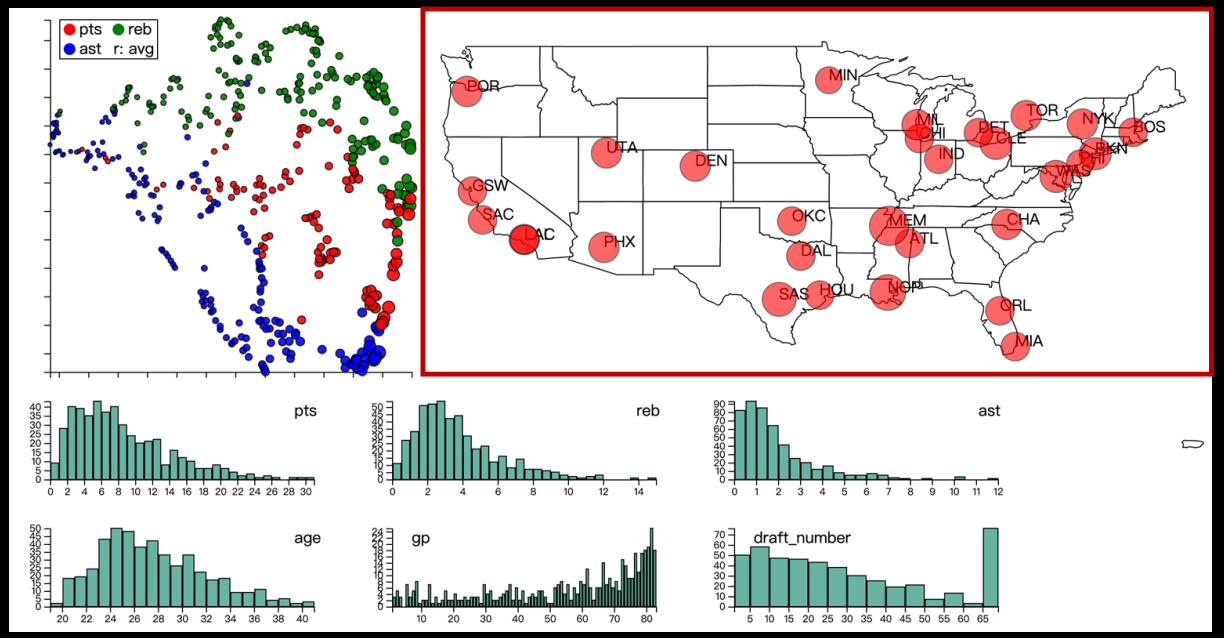
Practice 3: Bar Chart (Histogram)

- Show histograms of pts, reb, ast, age, gp, and draft_number
  - Note that the maximum number of “draft_number” is 60 and you can represent ”undrafted” as a number greater than 60 to show the histogram of ‘draft_number’
  - You may want to learn how to computer histogram here, https://d3-graph-gallery.com/graph/histogram_basic.html
- Each histogram should have its ‘x-tick’, ‘y-tick’, and ‘title’



Practice 4: Map

- Show the number of players and the team abbreviation on the map (according to the location of the team)
- The number of player of a team is encoded by the circle size



Need Helps?

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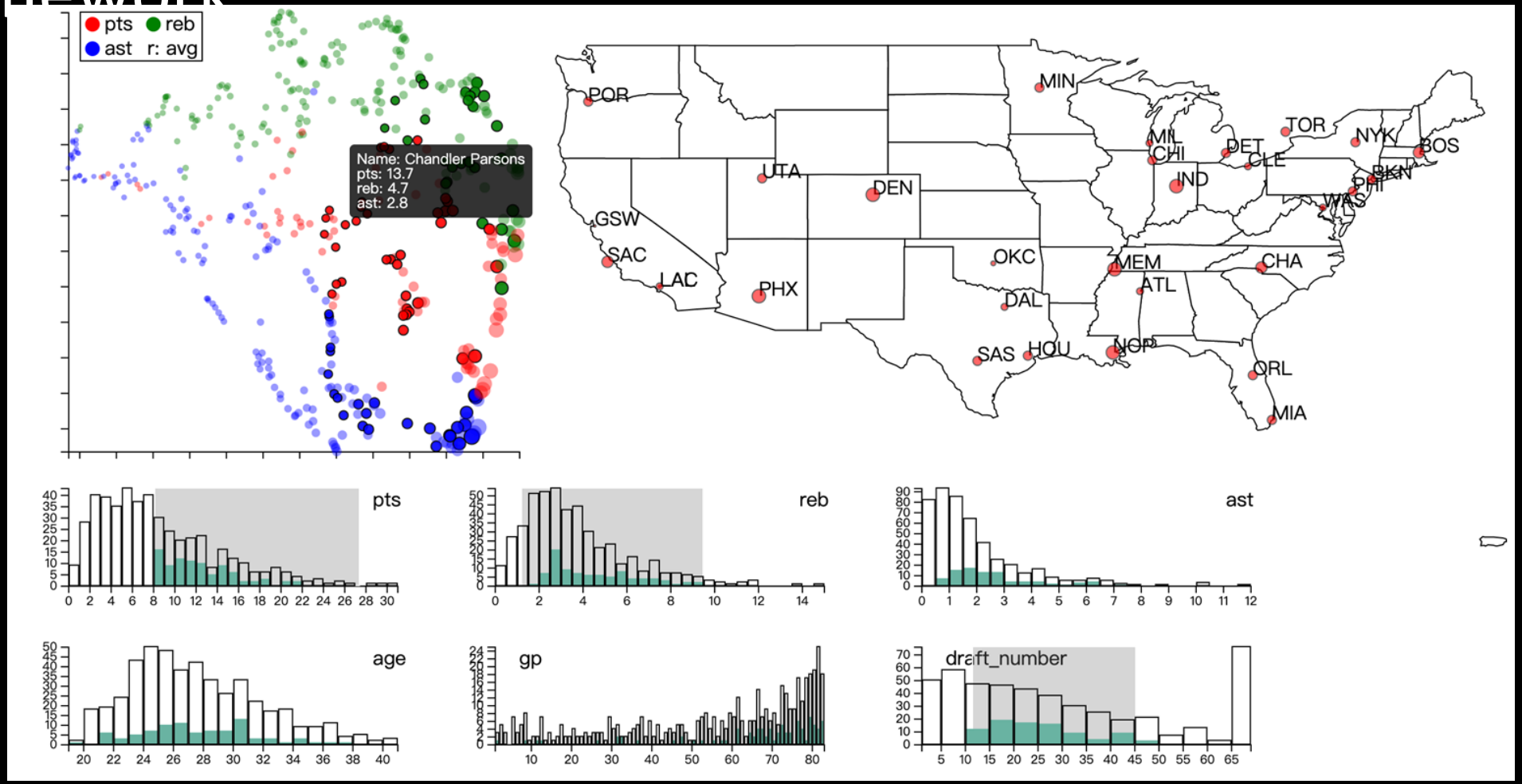
D3: Interaction

(NBA/basketball players Dataset)

Deadline: 11:59PM, 11/16 (Wed.)

This homework is an extension of the last D3 homework



Please also check the demonstration video on the moodle

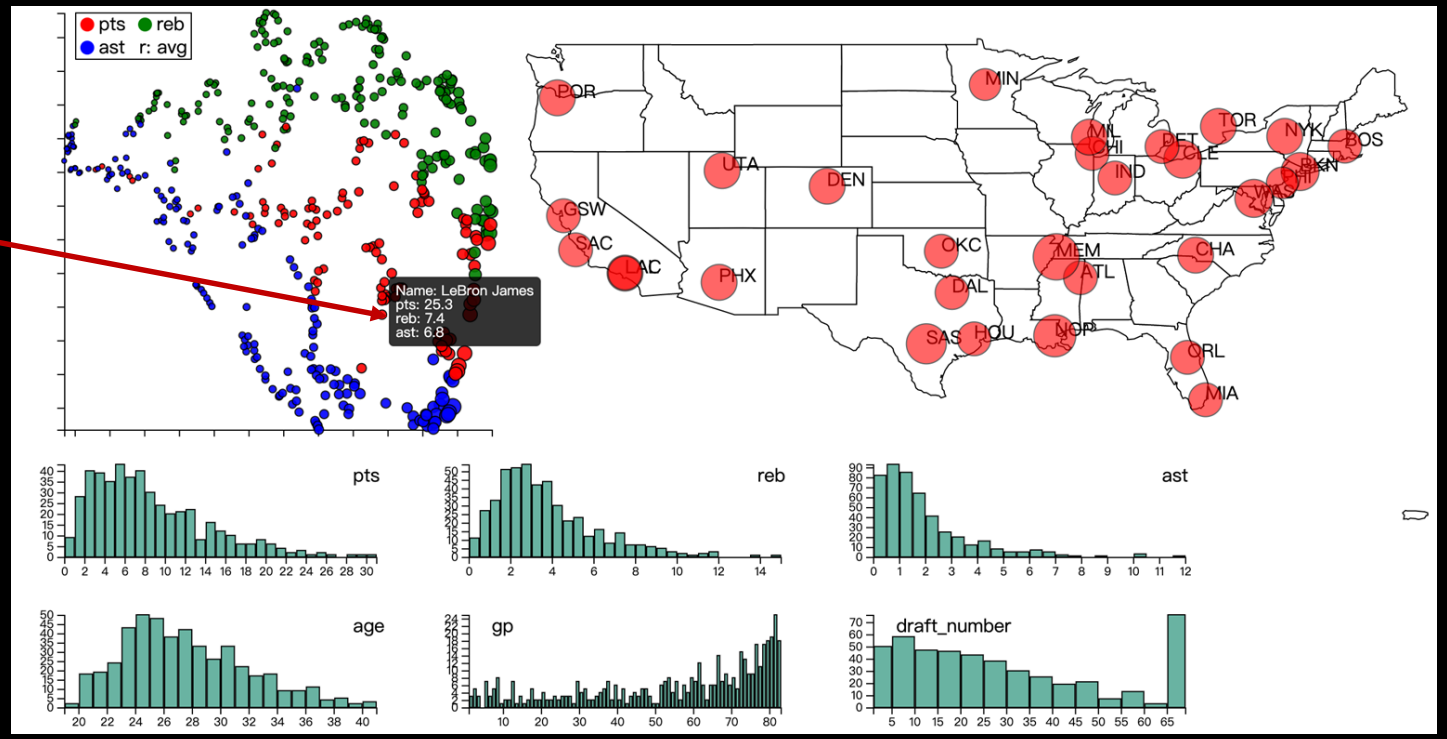
This image is for your reference.
You do not have to produce exactly same visualization

What you need to know?

- What do we have to know (D3) to make this homework done?
  - 01_BeforeD3
  - 02_Selection
  - 03_DataBinding
  - 04_Scale_Axis
  - 05_BasicShape
  - 06_Map
  - 07_Transition
  - 08_Interaction

Practice1 : Tooltip

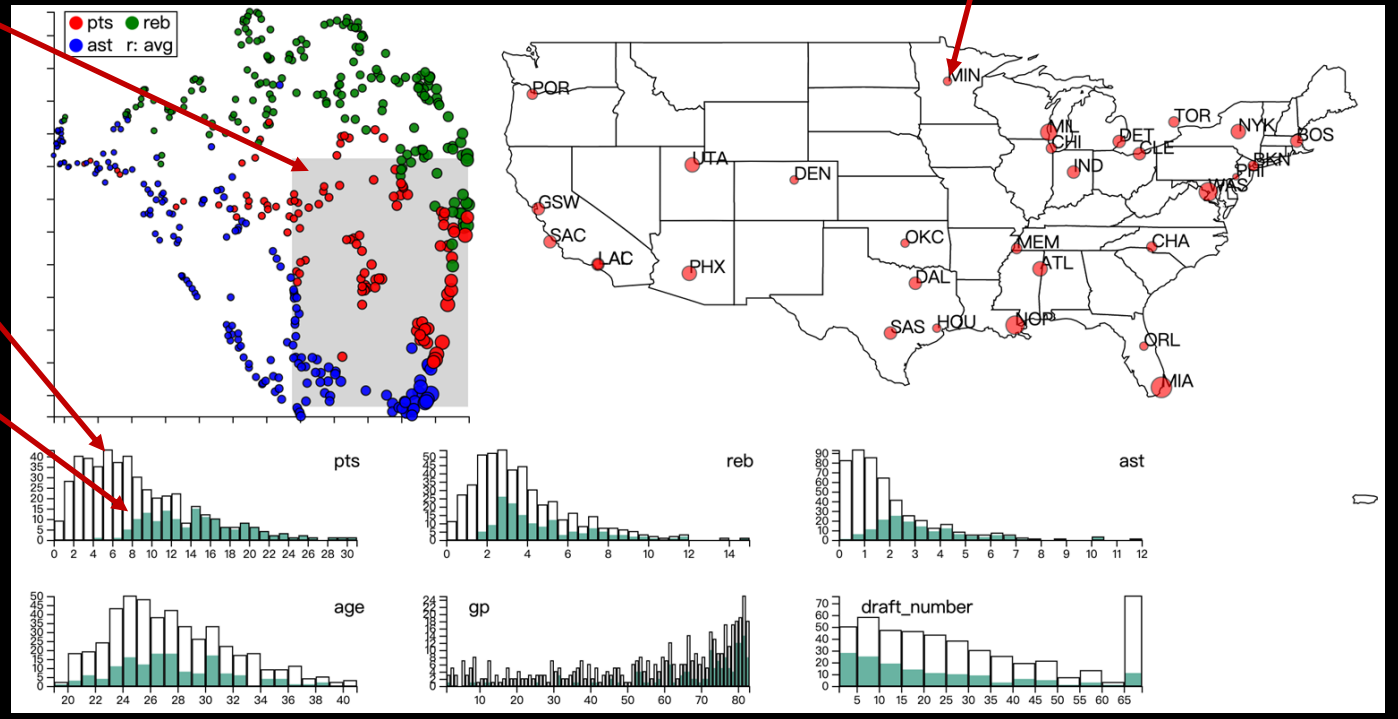
- When the mouse cursor hovers on a circle in the scatter plot, show a tooltip that displays “player name”, “pts”, ”reb”, and “ast”



Practice2 : Brush and update other views

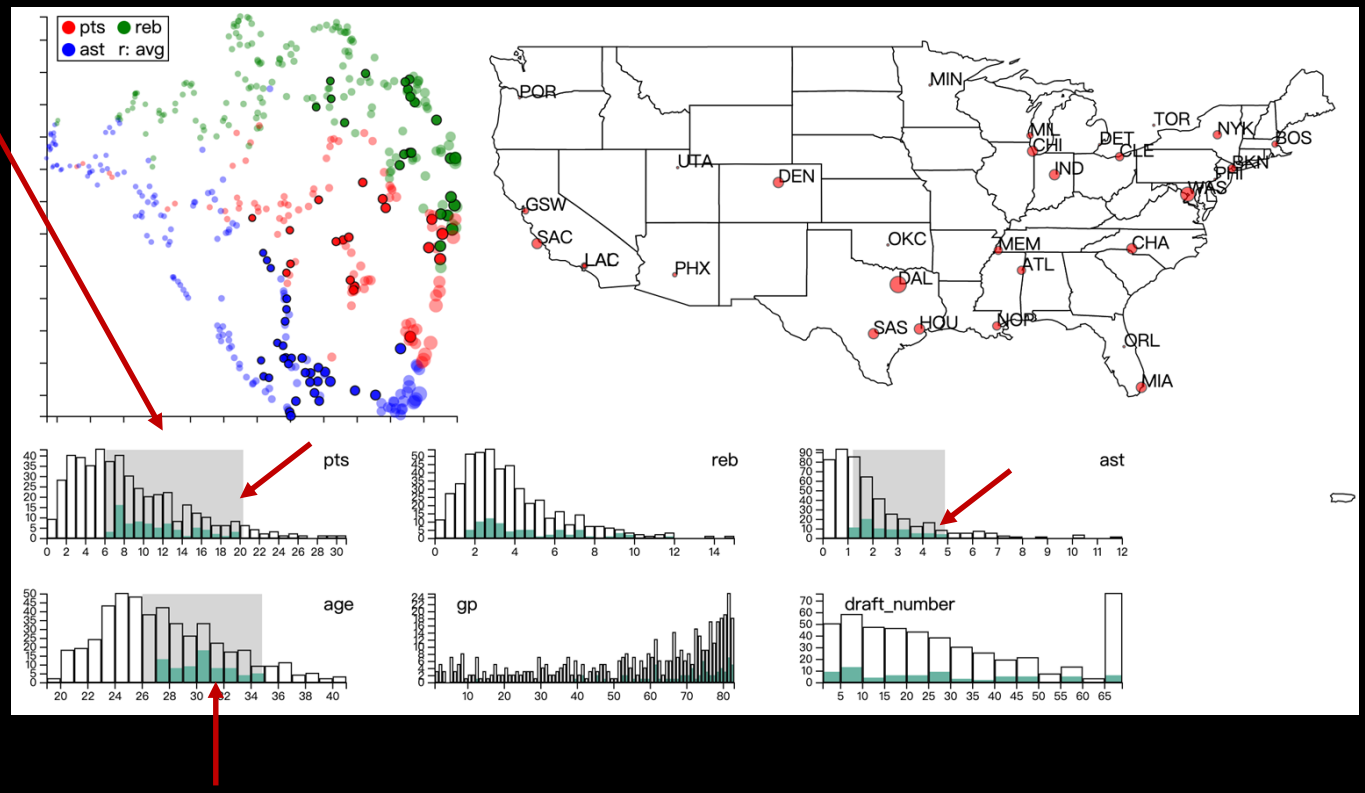
- Allow users to brush (select) circle in the scatter plot.
- Update the other views according to the selected circles(players) in the scatter plot
- All Bar chart/histograms: only the selected players are used to calculate new histogram (green). In addition, the histogram of all players are also shown by hollow rectangles.
- Circle on the map: the circle size of a team represents the number of selected players of the team
- When updating the bar charts and circle sizes on the map, the smooth transition should be implemented.
- If the user clicks at the empty space in the scatterplot, everything should be deselected. The bar charts and circles on the map should switch back to the initial state.

Size: the number of selected players of the team



Practice3 : BrushX in the barcharts for the cross filter

- Allow users to brush along the x-axis only in the bar charts.
- When the user brushes, the selected range of the attribute is a condition used to filter players
  - If the user brushes on multiple bar charts, all conditions are applied to filter players.
- When we have new set of players, we use the new set of players to
  - Update all bar charts/histogram (green part)
  - Circle size in the map
  - Highlight the selected player in the scatter plot (e.g. the non-selected players is shown by semi-transparent color without the stroke)
- Deselection
  - If the user clicks at the empty space of a bar chart, that means the uses wants to remove the condition produced by this bar chart. And, you should use new conditions to filter players and update all views.



Demonstration video

- https://www.youtube.com/watch?v=yZXtuP9UKxE&ab_channel=Ko-ChihWang

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